



Sun Enterprise™ 10000 System Board Installation and Configuration Guide

For 400-MHz and 466-MHz Components

Sun Microsystems, Inc.
4150 Network Circle
Santa Clara, CA 95054 U.S.A.
650-960-1300

Part No. 805-7189-12
March 2002, Revision A

Send comments about this document to: docfeedback@sun.com

Copyright 2002 Sun Microsystems, Inc., 901 San Antonio Road • Palo Alto, CA 94303-4900 USA. All rights reserved.

This product or document is protected by copyright and distributed under licenses restricting its use, copying, distribution, and decompilation. No part of this product or document may be reproduced in any form by any means without prior written authorization of Sun and its licensors, if any. Third-party software, including font technology, is copyrighted and licensed from Sun suppliers.

Parts of the product may be derived from Berkeley BSD systems, licensed from the University of California. UNIX is a registered trademark in the U.S. and other countries, exclusively licensed through X/Open Company, Ltd. For Netscape Communicator™, the following notice applies: Copyright 1995 Netscape Communications Corporation. All rights reserved.

Sun, Sun Microsystems, the Sun logo, AnswerBook2, docs.sun.com, Sun Enterprise, OpenBoot, Sun VTS, and Solaris are trademarks, registered trademarks, or service marks of Sun Microsystems, Inc. in the U.S. and other countries. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. in the U.S. and other countries. Products bearing SPARC trademarks are based upon an architecture developed by Sun Microsystems, Inc.

The OPEN LOOK and Sun™ Graphical User Interface was developed by Sun Microsystems, Inc. for its users and licensees. Sun acknowledges the pioneering efforts of Xerox in researching and developing the concept of visual or graphical user interfaces for the computer industry. Sun holds a non-exclusive license from Xerox to the Xerox Graphical User Interface, which license also covers Sun's licensees who implement OPEN LOOK GUIs and otherwise comply with Sun's written license agreements.

Federal Acquisitions: Commercial Software—Government Users Subject to Standard License Terms and Conditions.

DOCUMENTATION IS PROVIDED "AS IS" AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID.

Copyright 2002 Sun Microsystems, Inc., 901 San Antonio Road • Palo Alto, CA 94303-4900 Etats-Unis. Tous droits réservés.

Ce produit ou document est protégé par un copyright et distribué avec des licences qui en restreignent l'utilisation, la copie, la distribution, et la décompilation. Aucune partie de ce produit ou document ne peut être reproduite sous aucune forme, par quelque moyen que ce soit, sans l'autorisation préalable et écrite de Sun et de ses bailleurs de licence, s'il y en a. Le logiciel détenu par des tiers, et qui comprend la technologie relative aux polices de caractères, est protégé par un copyright et licencié par des fournisseurs de Sun.

Des parties de ce produit pourront être dérivées des systèmes Berkeley BSD licenciés par l'Université de Californie. UNIX est une marque déposée aux Etats-Unis et dans d'autres pays et licenciée exclusivement par X/Open Company, Ltd. La notice suivante est applicable à Netscape Communicator™: Copyright 1995 Netscape Communications Corporation. Tous droits réservés.

Sun, Sun Microsystems, the Sun logo, AnswerBook2, docs.sun.com, Sun Enterprise, OpenBoot, Sun VTS, et Solaris sont des marques de fabrique ou des marques déposées, ou marques de service, de Sun Microsystems, Inc. aux Etats-Unis et dans d'autres pays. Toutes les marques SPARC sont utilisées sous licence et sont des marques de fabrique ou des marques déposées de SPARC International, Inc. aux Etats-Unis et dans d'autres pays. Les produits portant les marques SPARC sont basés sur une architecture développée par Sun Microsystems, Inc.

L'interface d'utilisation graphique OPEN LOOK et Sun™ a été développée par Sun Microsystems, Inc. pour ses utilisateurs et licenciés. Sun reconnaît les efforts de pionniers de Xerox pour la recherche et le développement du concept des interfaces d'utilisation visuelle ou graphique pour l'industrie de l'informatique. Sun détient une licence non exclusive de Xerox sur l'interface d'utilisation graphique Xerox, cette licence couvrant également les licenciés de Sun qui mettent en place l'interface d'utilisation graphique OPEN LOOK et qui en outre se conforment aux licences écrites de Sun.

CETTE PUBLICATION EST FOURNIE "EN L'ETAT" ET AUCUNE GARANTIE, EXPRESSE OU IMPLICITE, N'EST ACCORDEE, Y COMPRIS DES GARANTIES CONCERNANT LA VALEUR MARCHANDE, L'APTITUDE DE LA PUBLICATION A REPENDRE A UNE UTILISATION PARTICULIERE, OU LE FAIT QU'ELLE NE SOIT PAS CONTREFAISANTE DE PRODUIT DE TIERS. CE DENI DE GARANTIE NE S'APPLIQUERAIT PAS, DANS LA MESURE OU IL SERAIT TENU JURIDIQUEMENT NUL ET NON AVENU.



Please
Recycle



Adobe PostScript

Sun Enterprise 10000 SSP Attributions:

This software is copyrighted by the Regents of the University of California, Sun Microsystems, Inc., and other parties. The following terms apply to all files associated with the software unless explicitly disclaimed in individual files.

The authors hereby grant permission to use, copy, modify, distribute, and license this software and its documentation for any purpose, provided that existing copyright notices are retained in all copies and that this notice is included verbatim in any distributions. No written agreement, license, or royalty fee is required for any of the authorized uses. Modifications to this software may be copyrighted by their authors and need not follow the licensing terms described here, provided that the new terms are clearly indicated on the first page of each file where they apply.

IN NO EVENT SHALL THE AUTHORS OR DISTRIBUTORS BE LIABLE TO ANY PARTY FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF THIS SOFTWARE, ITS DOCUMENTATION, OR ANY DERIVATIVES THEREOF, EVEN IF THE AUTHORS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

THE AUTHORS AND DISTRIBUTORS SPECIFICALLY DISCLAIM ANY WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT. THIS SOFTWARE IS PROVIDED ON AN "AS IS" BASIS, AND THE AUTHORS AND DISTRIBUTORS HAVE NO OBLIGATION TO PROVIDE MAINTENANCE, SUPPORT, UPDATES, ENHANCEMENTS, OR MODIFICATIONS.

RESTRICTED RIGHTS: Use, duplication or disclosure by the government is subject to the restrictions as set forth in subparagraph (c) (1) (ii) of the Rights in Technical Data and Computer Software Clause as DFARS 252.227-7013 and FAR 52.227-19.

This is scotty, a simple tcl interpreter with some special commands to get information about TCP/IP networks. Copyright (c) 1993, 1994, 1995, J. Schoenwaelder, TU Braunschweig, Germany, Institute for Operating Systems and Computer Networks. Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that this copyright notice appears in all copies. The University of Braunschweig makes no representations about the suitability of this software for any purpose. It is provided as is" without express or implied warranty.

Regulatory Compliance Statements

Your Sun product is marked to indicate its compliance class:

- Federal Communications Commission (FCC) — USA
- Industry Canada Equipment Standard for Digital Equipment (ICES-003) — Canada
- Voluntary Control Council for Interference (VCCI) — Japan
- Bureau of Standards Metrology and Inspection (BSMI) — Taiwan

Please read the appropriate section that corresponds to the marking on your Sun product before attempting to install the product.

FCC Class A Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Shielded Cables: Connections between the workstation and peripherals must be made using shielded cables to comply with FCC radio frequency emission limits. Networking connections can be made using unshielded twisted-pair (UTP) cables.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

FCC Class B Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Shielded Cables: Connections between the workstation and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits. Networking connections can be made using unshielded twisted pair (UTP) cables.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

ICES-003 Class A Notice - Avis NMB-003, Classe A

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

ICES-003 Class B Notice - Avis NMB-003, Classe B

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.


VCCI 基準について

クラス A VCCI 基準について

クラス A VCCI の表示があるワークステーションおよびオプション製品は、クラス A 情報技術装置です。これらの製品には、下記の項目が該当します。

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

クラス B VCCI 基準について

クラス B VCCI の表示  があるワークステーションおよびオプション製品は、クラス B 情報技術装置です。これらの製品には、下記の項目が該当します。

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス B 情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。取扱説明書に従って正しい取り扱いをしてください。

BSMI Class A Notice

The following statement is applicable to products shipped to Taiwan and marked as Class A on the product compliance label.

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Contents

Preface xv

1. Process Overview 1-1

- 1.1 Tools Required 1-1
- 1.2 Software Compatibility 1-1
- 1.3 Hardware Compatibility 1-2
 - 1.3.1 System Board - Processor 1-2
 - 1.3.2 Control Board - Processor 1-2

2. Upgrade Procedure 2-1

- 2.1 Upgrading the SSP 2-1
- 2.2 Installing the SSP Patches 2-2
- 2.3 Modifying the `blacklist` and `.postrc` Files 2-2
- 2.4 Dynamically Reconfiguring the System Boards 2-3
- 2.5 Shutting Down a Domain 2-4
- 2.6 Powering Off a System Board 2-5
- 2.7 Removing a System Board 2-5
- 2.8 Configuring System Board Components 2-6
 - 2.8.1 Replacing the SBus Component 2-7
 - 2.8.1.1 Removing the SBus Card and SBus I/O Module 2-7
 - 2.8.1.2 Installing the SBus I/O Module on the New System Board 2-7

2.8.1.3	Installing the SBus Card	2-9
2.8.2	Replacing the PCI Component	2-11
2.8.2.1	Preparing the System Boards	2-11
2.8.2.2	Installing the PCI Components	2-15
2.8.3	Replacing the Memory Component	2-17
2.8.4	Replacing the Processor Component	2-19
2.9	Installing a System Board	2-21
2.10	Powering On a System Board	2-22
2.11	Bringing Up a Domain That Was Shut Down	2-23
3.	Testing and Certification of the System	3-1
3.1	Shutting Down a Domain	3-1
3.2	Installing a Control Board	3-2
3.3	Modifying the <code>.postrc</code> File	3-2
3.4	Changing the Clock Multiplier and Frequency for Testing	3-3
3.5	Bringing Up the Platform for Test and Verification	3-4
3.6	Testing the System	3-4
3.7	Shutting Down a Domain	3-6
3.8	Setting the Clock Multiplier and Frequency	3-7
3.9	Restoring the <code>hpost</code> Level	3-9
3.10	Bringing Up a Domain That Was Shutdown	3-9
4.	Finishing the Installation	4-1
4.1	Using the RMA Procedure	4-1
4.2	Post-Installation Checklist	4-2
A.	Determining Dynamic Reconfigurability	A-1
	Index	Index-1

Figures

FIGURE 2-1	Tightening Pattern for the SBus I/O Module	2-8
FIGURE 2-2	Cone Washer and Standoff	2-9
FIGURE 2-3	PCI Components	2-11
FIGURE 2-4	PCI Front Cover	2-12
FIGURE 2-5	PCI Card	2-12
FIGURE 2-6	PCI Filler Panel	2-13
FIGURE 2-7	Replacing the PCI I/O Module	2-13
FIGURE 2-8	Removing the Face Plate	2-14
FIGURE 2-9	Personality Plates	2-14
FIGURE 2-10	Installing a Personality Plate—Top View	2-15
FIGURE 2-11	Tightening Pattern for the PCI I/O Module	2-16
FIGURE 2-12	Cone Washer and Standoff	2-16
FIGURE 2-13	PCI Slot Numbering	2-17
FIGURE 2-14	Tightening Pattern for the Memory Module	2-18
FIGURE 2-15	Cone Washer and Standoff	2-19
FIGURE 2-16	Tightening Pattern for the Processor Module	2-20

Tables

TABLE P-1	Related Documentation	xvii
TABLE 1-1	System Board - Processor Module Compatibility	1-2

Preface

This document provides the necessary procedures for upgrading a Sun Enterprise™ 10000 system with 400-MHz or 466-MHz processors. This document assumes that the reader is familiar with the Sun Enterprise 10000 system and its components.

How This Book Is Organized

Chapter 1 provides an overview of the tasks required to upgrade a system.

Chapter 2 provides the procedures for upgrading the system.

Chapter 3 provides the steps necessary for certifying the components and preparing them for use.

Chapter 4 provides the information for returning unused components.

Appendix A provides the criteria for determining if a system board can be dynamically deconfigured from a domain.

Using UNIX Commands

This document may not contain information on basic UNIX[®] commands and procedures such as shutting down the system, booting the system, and configuring devices.

See one or more of the following for this information:

- AnswerBook2[™] online documentation for the Solaris[™] software environment
- Other software documentation that you received with your system

Typographic Conventions

Typeface	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. <code>% You have mail.</code>
AaBbCc123	What you type, when contrasted with on-screen computer output	<code>% su</code> Password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be superuser to do this.
	Command-line variable; replace with a real name or value	To delete a file, type <code>rm filename</code> .

Related Documentation

TABLE P-1 Related Documentation

Application	Title	Part Number
Software	<i>Sun Enterprise 10000 Dynamic Reconfiguration User Guide</i>	806-7616
	<i>Sun Enterprise 10000 SSP User Guide</i>	806-7613
	<i>Sun Enterprise Server Alternate Pathing User Guide</i>	805-5985
Operation	<i>Sun Enterprise 10000 System Service Manual</i>	805-2917
Installation	<i>Sun Enterprise 10000 System Hardware Installation and De-Installation Guide</i>	805-4651

Accessing Sun Documentation Online

A broad selection of Sun system documentation is located at the following web site:

<http://www.sun.com/products-n-solutions/hardware/docs>

To locate the most current documentation at this site, select a product category. The documents at that location may include updated information that did not ship with your product, such as product notes, release notes, late-breaking news, or later revisions of manuals.

A complete set of Solaris documentation and many other titles are located at:

<http://docs.sun.com>

Sun Welcomes Your Comments

Sun is interested in improving its documentation and welcomes your comments and suggestions. You can email your comments to Sun at:

docfeedback@sun.com

Please include the part number (805-7189-12) of your document in the subject line of your email.

Process Overview

1.1 Tools Required

The following list represents the minimum of tools that you need to perform the upgrade procedure:

- Screwdriver, common (flat-bladed), 1/8-inch, 3/16-inch
- Screwdriver, Phillips, No. 2
- Torque driver

1.2 Software Compatibility

Note – Check to make sure that all of the latest SSP, DR, AP, and Solaris patches have been obtained from SunSolve and installed on the system. Failure to install all of the available patches can result in the unsuccessful completion of the upgrade.

- Solaris 2.5.1, or a subsequent compatible version of the operating environment, can be used. However, to upgrade to 400-MHz or 466-MHz processors on a domain-by-domain basis, the domains must be running a Solaris 2.6 or subsequent version that supports Dynamic Reconfiguration (DR) and Alternate Pathing (AP).
- It is recommended that the SSP software be upgraded to a minimum version of SSP 3.3.
- You must be running SSP 3.1.1 or a version compatible with a 400 MHz upgrade.
- You must be running SSP 3.3 or a version compatible with a 466 MHz upgrade.

- The latest SSP patches must be obtained from SunSolveSM.

1.3 Hardware Compatibility

1.3.1 System Board - Processor

TABLE 1-1 System Board - Processor Module Compatibility

System board	Part number	250 or 336-MHz processor module	400-MHz processor module	466-MHz processor module
2760A	501-4903-01 501-4786-02 501-4347-10	Yes	No	No
2761A	501-5240-01 501-5240-02 501-5240-03 ¹ 501-5693-02 ¹	Yes ²	Yes	Yes

1. Other service options may be compatible.

2. System clock will be at reduced speed.

Note – To achieve 400-MHz operation, all system boards must be 2761As and all processors must be 400-MHz. To achieve 466-MHz operation, all system boards must be 2761As and all processors must be 466-MHz.

1.3.2 Control Board - Processor

Control Board 501-5494-01 or compatible is necessary for 466-MHz operation.

Upgrade Procedure

All processors within a Sun Enterprise 10000 must operate at the same speed. You can install 400-MHz or 466-MHz processor modules on the system boards on a domain-by-domain basis. After upgrading, the domain can resume operation, but the platform will continue to operate at the lower speed (250 MHz or 336 MHz or 400 MHz).

To operate at 400 MHz or 466 MHz, the platform must be shut down, the clock changed, and the platform tested and certified (Chapter 3).

The following procedures support the domain-by-domain upgrade process as well as a platform-wide upgrade. For a platform-wide upgrade, certain steps are skipped, as noted within the procedure.

2.1 Upgrading the SSP

1. Refer to the SSP upgrade procedure that is included either with the SSP 3.1.1 CD (minimum requirement for 400 MHz) or the SSP 3.3 CD (minimum requirement for 466MHz) or in the *Sun Enterprise 10000 System Hardware Installation and De-Installation Guide*.
2. After the SSP is upgraded, continue with Section 2.2 .

2.2 Installing the SSP Patches

1. **Verify that all of the latest SSP patches have been installed.**

Refer to the SunSolve database for the latest released patches.

2. **After the patches are installed, continue with Section 2.3 .**

Note – As noted in Section 1.2, “Software Compatibility” on page 1-1, all released patches must be installed. Failure to do this can result in the unsuccessful completion of the upgrade.

2.3 Modifying the blacklist and .postrc Files

1. **Unblacklist all blacklisted 2760A system boards and 250/336-MHz processor modules in the domain in which you are working.**

Unblacklisting system boards and processor modules enables these components to be configured into the domain during bringup. The `blacklist` files can be located in either `$SSPVAR/etc/platform/blacklist` or relocated based on the `.postrc` file.

Other `.postrc` files may also be located in `$SSPVAR/etc/platform_name/domain_name/.postrc`. If more than one `.postrc` files exists, refer to `hpost(1M)` and `postrc(1M)` for more information on the use of the `blacklist` and `.postrc` files.

Do this for all domains that have a personalized `.postrc` file. Refer to the *Sun Enterprise 10000 SSP User Guide*.

2. **Copy the `.postrc` file to `.postrc.orig` in the domain in which you are working.**
3. **Modify the `.postrc` file as shown.**

This can be done by either editing the existing default or adding the lines:

```
...  
level 17  
...
```

4. After the `.postrc` files are edited, continue with Section 2.4 .

2.4 Dynamically Reconfiguring the System Boards

1. Determine which system boards have alternate paths configured.

See Appendix A for general guidelines. Additionally, consult with the site personnel to determine Alternate Pathing status and refer to the *Sun Enterprise Server Alternate Pathing User Guide*. If system boards cannot be dynamically reconfigured, see Section 2.5, “Shutting Down a Domain” on page 2-4.

Note – This procedure is designed to minimize the downtime for a 400-MHz or 466-MHz upgrade. However, it should be noted that some system boards may not be detachable due to system configuration.

2. Modify the `.postrc` file as shown.

This can be done by either editing the existing default or adding the lines:

```
...
skip_phase jtag_integ
...
```

The `skip_phase jtag_integ` command is used to allow 400-MHz or 466-MHz processor modules to be introduced into the system without running `autoconfig` and rebooting the SSP for each system board.



Caution – Inserting the `skip_phase jtag_integ` command into the `.postrc` file will suppress error messages that would indicate the lack of appropriate post patches for the 400-MHz or 466-MHz processors. As noted in Section 1.2, “Software Compatibility” on page 1-1, all released patches must be installed. Failure to do this can result in the unsuccessful completion of the upgrade.

3. Dynamically reconfigure the system board to be upgraded out of the domain.
Refer to the *Sun Enterprise 10000 Dynamic Reconfiguration User Guide*.
4. After the system board has been dynamically reconfigured out of the domain, continue with Section 2.6, “Powering Off a System Board” on page 2-5.

